

SUPPORT FOR THE AMENDMENTS

The amendment to Claim 20 is supported by the specification. Accordingly, no new matter is believed to have been added to the present application by the amendments submitted above.

REMARKS

Claims 20-38 are pending. Favorable reconsideration is respectfully requested.

The present invention relates to a method for the selective concentration of a macromolecule or of an agglomerate of molecules or of particles initially contained in a liquid sample, the method successively comprising:

providing of a liquid medium, wherein the liquid medium comprises:

a liquid sample comprising the macromolecule or the agglomerate to be concentrated; and

a liquid non-foamed interface layer, wherein the interface layer (a) is separated from the liquid sample and located at the surface of the liquid sample, (b) fixes the macromolecule or the agglomerate and (c) has a small volume compared to the volume of the liquid sample;

forming a stabilized dispersion of foam or emulsion type in the liquid medium, by mechanical agitation of the medium or by injection, directly in the liquid sample, of gaseous or liquid capillary jets, to form an interstitial film constituting the foam or an interstitial medium constituting the emulsion; and

resorbing the dispersion to reform the interface layer by drainage of the interstitial film constituting the foam or by drainage of the interstitial medium constituting the emulsion, wherein the macromolecule or the agglomerate is concentrated in the interface layer.

An important feature of the claimed method is the presence of the interface layer located at the surface of the liquid sample. The interface layer is liquid and non-foamed. In addition, the interface layer (a) is separated from the liquid sample and located at the surface of the liquid sample, (b) fixes the macromolecule or the agglomerate and (c) has a small volume compared to the volume of the liquid sample. See Claim 20.

Another important feature is the formation of a stabilized dispersion containing the interface layer and the liquid sample followed by resorbing the dispersion to reconstitute the interface located at the surface of the liquid sample.

The rejection of the claims under 35 U.S.C. §102(b) over Lockwood et al. is respectfully traversed. The cited reference fails to disclose the claimed method.

Lockwood et al. describe a process for purifying proteins based on foam fractionation. See the Abstract. As shown in Figure 1 of the reference, in this process, nitrogen bubble are introduced at the bottom of a glass column into a feed solution, which contains the protein to be purified. The bubbles then rise and form a foam on top of the feed solution. At the exit point of the column, the foam is collected and collapsed. See the text bridging pages 1511 and 1512.

The procedure described by Lockwood et al. differs from the claimed method in several ways.

First, Lockwood et al. fails to provide a liquid non-foamed interface layer that is (a) is separated from the liquid sample and located at the surface of the liquid sample, (b) fixes the macromolecule or the agglomerate and (c) has a small volume compared to the volume of the liquid sample;. In Lockwood et al., nitrogen is bubbled directly into the sample solution (denoted the “feed solution” in the reference). There is simply no liquid non-foamed interface layer.

Since Lockwood et al. fail to provide an interface layer as specified in Claim 20, the reference necessarily fails to disclose resorbing the dispersion to reform the interface layer by drainage of the interstitial film constituting the foam or by drainage of the interstitial medium constituting the emulsion, where the macromolecule or the agglomerate is concentrated in the interface layer, as claimed.

In the paragraph bridging pages 8 and 9 of the Final Rejection, the Examiner presents an argument that “Lockwood meets the limitations of the claims as currently written.” That is certainly not true for Claim 20 as amended herein. Lockwood certainly fails to disclose a liquid non-foamed interface layer that is separated from the liquid sample and located at the surface of the liquid sample, as explicitly specified in Claim 20.

In view of the foregoing, Lockwood et al. fail to disclose the claimed method. Accordingly, the subject matter of Claims 20-35 is not anticipated by Lockwood et al. Withdrawal of this ground of rejection is respectfully requested.

The rejection of the claims under 35 U.S.C. §103(a) over Lockwood et al. and Lalchev et al. in view of Ijiro et al. is respectfully traversed. The combination of the cited references fails to suggest the claimed method.

As discussed above, Lockwood et al. fails to provide an interface layer and resorbing the dispersion to reform the interface layer by drainage of the interstitial film constituting the foam or by drainage of the interstitial medium constituting the emulsion.

Lalchev et al. describes the foam separation of DNA and proteins from solutions. See the Abstract. In the process described in this reference, the initial solution is provided in the reactor. Then, compressed nitrogen is introduced through a porous plate to produce a foam. Next, a pressure gradient is created in the foam in such a way that only the liquid, and not the gas, is able to pass through the porous plate.

Lalchev et al. fail to disclose a liquid non-foamed interface layer, where the interface layer (a) is located at the surface of the liquid sample, (b) fixes the macromolecule or the agglomerate and (c) has a small volume compared to the volume of the liquid sample. Since Lockwood et al. fail to provide an interface layer, the reference necessarily fails to disclose resorbing the dispersion to reform the interface layer by drainage of the interstitial film constituting the foam or by drainage of the interstitial medium constituting the emulsion,

where the macromolecule or the agglomerate is concentrated in the interface layer, as claimed.

Ijiro et al. provide a method of detecting a nucleic acid polymer in an aqueous phase. See the Abstract. However, this reference neither discloses nor suggests forming a stabilized dispersion followed by a resorption step, as claimed.

In view of the foregoing, the combination of Lockwood et al., Lalchev et al. and Ijiro et al. fails to suggest the claimed method. Accordingly, the subject matter of the pending claims is not obvious over those references. Withdrawal of this ground of rejection is respectfully requested.

Applicants submit that the present application is in condition for allowance. Early notice to this effect is earnestly solicited.

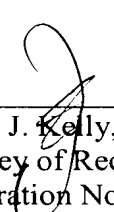
Respectfully submitted,

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